

*Title:* Project portfolio optimization with time and resources

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*Abstract:*

Traditional project portfolio optimization deals with static projects that are not evolving in time. The focus of this diploma thesis is on projects that are spread in time, typically such projects consists of a sequence (or other partially ordered structure) of actions that require some resources (money, people, etc.) for realization. Then the project portfolio optimization deals with selecting a subset of projects according to given time and space (resource) restrictions and optimizing certain criteria such as overall profit. This problem is very close to oversubscribed scheduling where the most profitable subset of orders is being scheduled. Hence scheduling techniques will be the main inspiration for solving this new type of problems. Lots of modelling algorithms for optimal portfolio selection are proposed in this diploma thesis and several of them are implemented in a program which is part of this thesis as well.

*Keywords:* portfolio optimization, integer linear programming (ILP), workflow optimization, project interdependencies